

Cont  
A<sup>d</sup>  
or is substantially continuously monotone increasing or decreasing in the direction substantially perpendicular to said direction of light propagation.

Specification at page 5, line 4:

A3  
Still another aspect of the present invention is an optical element comprising: a substrate having or not having a channel for optical waveguide; and a material which has a refractive index higher than that of said substrate and is filled in said channel for optical waveguide or is disposed on said substrate; wherein

Specification at page 5, line 14:

A4  
Yet still another aspect of the present invention is an optical element comprising: a substrate having or not having a channel for optical waveguide; and a resin which has a refractive index higher than that of said substrate and is filled in said channel for optical waveguide or is disposed on said substrate; wherein

Specification at page 5, line 23:

A5  
Still yet another aspect of the present invention is an optical element according to 4th invention, said part of resin the refractive index of which varies is formed using the photo-hardening or thermo-hardening property of said resin.

Specification at page 6, line 2:

A6  
A further aspect of the present invention is an optical element comprising: a substrate having or not having a channel for optical waveguide; and a material which has a refractive index higher than that of said substrate and is filled in said channel for optical waveguide or is disposed on said substrate; wherein

Specification at page 6, line 13:

A7  
A still further aspect of the present invention is an optical element comprising: a substrate having or not having a channel for optical waveguide; and a material which has a refractive index higher than that of said substrate and is filled in said channel for optical waveguide or is disposed on said substrate; wherein

Specification at page 6, line 24:

A8  
A yet further aspect of the present invention is an optical element comprising: a substrate having or not having a channel for optical waveguide; and a material which has a refractive index higher than that of said substrate and is filled in said channel for optical waveguide or is disposed on said substrate; wherein

Specification at page 7, line 11:

A9  
A still yet further aspect of the present invention is an optical element, wherein said protruding parts are provided substantially periodically.

Specification at page 7, line 14:

A10  
An additional aspect of the present invention is an optical element, wherein said material is composed of glass material or resin.

Specification at page 7, line 18:

A11  
A still additional aspect of the present invention is in a method of fabrication of optical element, wherein photo-hardening resin is formed in a substrate, and wherein light is irradiated onto said photo-hardening resin, thereby hardening said photo-hardening resin, a method of fabrication of optical element wherein the amount of said light irradiated onto the surface of said photo-hardening resin is varied.

Specification at page 7, line 25:

A12  
A yet additional aspect of the present invention is a method of fabrication of optical element, wherein the amount of said light irradiation is varied substantially periodically or is substantially continuously monotone increasing or decreasing, in a predetermined direction on the surface of said photo-hardening resin.

Specification at page 8, line 6:

A13  
A still yet additional aspect of the present invention is a method of fabrication of optical element, wherein the intensity of said light irradiation onto said photo-hardening resin is varied, whereby the amount of said light irradiation onto the surface of said photo-hardening resin is varied.

Specification at page 8, line 12:

A14 A supplementary aspect of the present invention is a method of fabrication of optical element, wherein a mask having partially different light transmissivity is used, whereby the intensity of said light irradiation onto the surface of said photo-hardening resin is varied.

Specification at page 8, line 17:

A15 A still supplementary aspect of the present invention is a method of fabrication of optical element, wherein a light shielding plate is used so as to sequentially change the region irradiated by said light, whereby the amount of said light irradiation onto is varied.

Specification at page 8, line 22:

A16 A yet supplementary aspect of the present invention is in a method of fabrication of optical element, wherein photo-hardening resin is formed in a substrate, and wherein light is irradiated onto said photo-hardening resin, thereby hardening said photo-hardening resin, a method of fabrication of optical element, wherein another optical component is connected to said photo-hardening resin, and then said photo-hardening resin is hardened, whereby said optical component is fixed to said photo-hardening resin.

Specification at page 9, line 6:

A17 A still yet supplementary aspect of the present invention is a method of fabrication of an optical element, wherein said channel for optical waveguide in said substrate is formed in a integrated manner using a mold having protrusion and recess in the surface thereof.

Specification at page 9, line 14:

A18 Another aspect of the present invention is a method of fabrication of an optical element, wherein the protrusion and recess in said substrate of said optical element is formed in a integrated manner using a mold having protrusion and recess in the surface thereof.

Specification at page 9, line 19:

A19 Figures 1a-b are diagrams showing an optical element according to a first embodiment of the invention.

Specification at page 9, line 22:

A20 Figures 2a-b are diagrams showing the function of an optical-waveguide type diffraction grating according to a first embodiment of the invention.

Specification at page 10, line 1:

A21 Figures 3a-d are diagrams showing an optical element according to a second embodiment of the invention.

Specification at page 10, line 7: